



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,892	09/29/2003	Eric A. Jacobsen	884.A54US1	6138
21186 7590 07/26/2007 SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER KUMAR, PANKAJ	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 07/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/675,892	Applicant(s) JACOBSEN ET AL.	
	Examiner Pankaj Kumar	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 15-20, 22-24, 26, 27, 29 and 30 is/are allowed.
- 6) ☒ Claim(s) 1, 10, 21, 25 and 28 is/are rejected.
- 7) ☒ Claim(s) 2-9, 13, 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claim have been considered but are moot in view of the new ground(s) of rejection.

Response to Amendment

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 10, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung USPN 7,124,193 in view of Crilly USPN 7,177,369.
4. As per claim 1. (Currently Amended) A method comprising selecting a transmit power level (Leung col. 3 lines 60-61: "power control adjusts transmission power level") and subcarrier (Leung paragraph 16: subband "With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold"; paragraph 32: "available spectrum is divided into 3 frequency sets") modulation assignments (Leung col. 3 lines 41-42: "Link adaptation adapts the modulation and coding levels of the signal") for individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (not in Leung but would be obvious as explained below) based on measured

Art Unit: 2611

channel conditions (Leung paragraph 12: “according to the channel and interference conditions”) to achieve a performance level for communications (Leung col. 3 lines 61-62: “achieving a desirable performance”; col. 3 line 54: “achieve a target error probability needed for the music service”; error would inherently occur over the communication channel at the receiver due to various factors such as noise) over a an OFDM communication channel. Leung does not teach OFDM. Crilly teaches for individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (Crilly Paragraph 110: “... OFDM tones ... Then the highest allowed power spectral density for that particular sub-carrier is used, while the power spectral density for other tones is reduced to allow the other tones to sustain the same level of QAM, QPSK, BPSK, etc.”). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Crilly into Leung since Leung suggests adjusting power and modulation (something broad) in general and Crilly suggests the beneficial use of adjusting for individual tones of an OFDM signal (Crilly paragraph 110) such as to account for path loss (Crilly paragraph 110) in the analogous art of signal communication.

5. As per claim 10. (Currently Amended) The method of claim 1 wherein the selecting comprises selecting modulation rates for the individual subcarriers of the OFDM signal based on the measured channel conditions (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”; Leung paragraph 12: “according to the channel and interference conditions”; Crilly paragraph 110).

6. As per claim 28, Leung teaches selecting a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a

Art Unit: 2611

1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (not in Leung but would be obvious as explained below) based on measured channel conditions (Leung col. 3 lines 42-43: according to the channel and interference conditions) to achieve a performance level for communications (Leung col. 3 lines 61-62: “achieving a desirable performance”) over a symbol-modulated subcarrier communication channel (Leung paragraph 15: “(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive TDMA frames). Depending on the transmission mode, the number of information bits varies from one block to another.”; paragraph 32: “available spectrum is divided into 3 frequency sets”; paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”).

7. Leung does not teach OFDM. Crilly teaches for individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (Crilly Paragraph 110: “... OFDM tones ... Then the highest allowed power spectral density for that particular sub-carrier is used, while the power spectral density for other tones is reduced to allow the other tones to sustain the same level of

Art Unit: 2611

QAM, QPSK, BPSK, etc.”). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Crilly into Leung since Leung suggests adjusting power and modulation (something broad) in general and Crilly suggests the beneficial use of adjusting for individual tones of an OFDM signal (Crilly paragraph 110) such as to account for path loss (Crilly paragraph 110) in the analogous art of signal communication.

8. Claims 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung USPN 7,124,193 in view of Cannella USPN 5,668,810 and Crilly USPN 7,177,369.

9. As per claim 21, Leung teaches an application controller to determine a desired performance level (Leung col. 3 line 54: “achieve a target error probability”; col. 3 line 53: SINR) for an application (Leung col. 3 line 54: “achieve a target error probability needed for the music service”) and data type (Leung col. 3: MPEG-4, 8 slots per GSM TDMA frame, 65kbps, 11kbps); and a physical layer (Leung teaches physical layer but does not teach that the physical layer selects transmit power level but it would be obvious as explained below) to select a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”; paragraph 32: “available spectrum is divided into 3 frequency sets”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) for individual subcarriers of an orthogonal frequency division

Art Unit: 2611

multiplexed (OFDM) signal for receipt of data over an OFDM (not in Leung but it would have been obvious as explained below) communication channel at the desired performance level (Leung col. 3 lines 61-62: "achieving a desirable performance"; col. 3 line 54: "achieve a target error probability needed for the music service"; error would inherently occur over the communication channel at the receiver due to various factors such as noise).

10. Leung teaches physical layer but does not teach that the physical layer selects transmit power level and modulation. Cannella 5668810 teaches physical layer selects transmit power level and modulation (Cannella 5668810 col. 4 lines 39-41 "Cabling, connectors, signal level, modulation scheme, and bandwidth are determined in the physical layer 120 by the user for a particular application of the present protocol"). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Cannella into Leung since Leung suggests physical layer (something broad) in general and Cannella suggests the beneficial use of physical layer selecting transmit power level and modulation such as for a user to apply such controls based on a particular application (Cannella 5668810 col. 4 lines 39-41 "Cabling, connectors, signal level, modulation scheme, and bandwidth are determined in the physical layer 120 by the user for a particular application of the present protocol") in the analogous art of communication.

11. Leung does not teach OFDM. Crilly teaches for individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (Crilly Paragraph 110: "... OFDM tones ... Then the highest allowed power spectral density for that particular sub-carrier is used, while the power spectral density for other tones is reduced to allow the other tones to sustain the same level of QAM, QPSK, BPSK, etc"). Thus, it would have been obvious to one of ordinary skill in the art

Art Unit: 2611

at the time of the invention was made to implement the teachings of Crilly into Leung since Leung suggests adjusting power and modulation (something broad) in general and Crilly suggests the beneficial use of adjusting for individual tones of an OFDM signal (Crilly paragraph 110) such as to account for path loss (Crilly paragraph 110) in the analogous art of signal communication.

12. Claims 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leung USPN 7,124,193 in view of Doynov US 2002/0163495 and Crilly USPN 7,177,369.

13. As per claim 25, Leung teaches a omnidirectional antenna (not in Leung but would be obvious as explained below) to receive communications over an orthogonal frequency division multiplexed (OFDM) a-symbol-modulated-subcarrier communication channel (Leung paragraph

15: "(15) The EGPRS employs a link-adaptation technique to adapt the modulation and coding level (which is referred to as transmission mode below) for each link according to its radio and interference conditions. For each link the adaptation occurs once every 100 msec. Information bits are grouped into EDGE radio blocks, each of which are transmitted in four bursts (i.e., in the same time slot of four consecutive TDMA frames). Depending on the transmission mode, the number of information bits varies from one block to another"; paragraph 32: "available spectrum is divided into 3 frequency sets"; paragraph 16: subband "With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold."; col. 1 line 60: receiver; col. 2 line 25; col. 5 line 47; col. 7 line 37, 39); a physical layer coupled with the antenna (not in Leung but would be obvious as

Art Unit: 2611

explained below) to select a transmit power level (Leung col. 3 lines 60-61: “power control adjusts transmission power level”) and subcarrier (Leung paragraph 16: subband “With AAC, the audio stream is divided into subbands using a filter bank, which uses a 1024 point Modified Discrete Cosine Transform (MDCT). Quantization noise (step size) is set separately in each subband to fall below the masking threshold.”) modulation assignments (Leung col. 3 lines 41-42: “Link adaptation adapts the modulation and coding levels of the signal”) individual subcarriers of an OFDM signal (not in Leung but would be obvious as explained below) based on channel conditions (Leung col. 3 lines 42-43: according to the channel and interference conditions) to achieve a performance level (Leung col. 3 lines 61-62: “achieving a desirable performance”); and an application controller to determine the performance level (Leung col. 3 line 54: “achieve a target error probability”; col. 3 line 53: SINR) based on an application (Leung col. 3 line 54: “achieve a target error probability needed for the music service”) and data type (Leung col. 3: MPEG-4, 8 slots per GSM TDMA frame, 65kbps, 11kbps).

14. Leung does not teach omnidirectional antenna and physical layer coupled with the antenna. Doynov teaches omnidirectional antenna (Doynov paragraph 12) and physical layer coupled with the antenna (Doynov claim 5). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Doynov into Leung since Leung suggests transmission and physical layer (something broad) in general and Doynov suggests the beneficial use of omnidirectional antenna for transmission and physical layer coupled with the antenna such as for processing communication in all directions in the analogous art of communication.

Art Unit: 2611

15. Leung does not teach OFDM. Crilly teaches for individual subcarriers of an orthogonal frequency division multiplexed (OFDM) signal (Crilly Paragraph 110: "... OFDM tones ... Then the highest allowed power spectral density for that particular sub-carrier is used, while the power spectral density for other tones is reduced to allow the other tones to sustain the same level of QAM, QPSK, BPSK, etc"). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement the teachings of Crilly into Leung since Leung suggests adjusting power and modulation (something broad) in general and Crilly suggests the beneficial use of adjusting for individual tones of an OFDM signal (Crilly paragraph 110) such as to account for path loss (Crilly paragraph 110) in the analogous art of signal communication.

Allowable Subject Matter

16. Claims 11, 12, 15-20, 22-24, 26, 27, 29, 30 are allowed. See prior action for details.

17. Claims 2-9, 13, 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

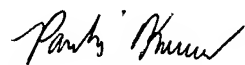
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2611

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Pankaj Kumar
Primary Examiner
Art Unit 2611

PK